

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

no action
OK
DHL

Date: July 21, 1976

Project Title: Graduate - Postdoctoral Training in Dental Materials

Project No: E-19-562

Project Director: Dr. R. F. Hochman

Sponsor: National Institute of Dental Research, DHEW/PHS

Agreement Period: From 7/1/76 Until 6/30/77*
*01 Year; overall grant period 7/1/76 - 6/30/81)

Type Agreement: Training Grant No. 1 T32 DE0 7053-01

Amount: \$58,192

Reports Required: Statement of Appointment of Trainee
Interim Progress Report
Terminal Progress Report (only if project is not renewed)

Sponsor Contact Person (s):

Technical Matters

Thomas M. Valega, Ph.D.
Dental Program Official
Chief, Restorative Materials
Program Branch
Extramural Programs
National Institute of Dental Research
Dept. of Health, Education & Welfare
Bethesda, Md. 20014

Contractual Matters

(thru OCA)

Robert Ginsburg
Grants Management Office
National Institutes of Dental Research
Dept. of Health, Education, & Welfare
Bethesda, Md. 20014

Defense Priority Rating: None

Assigned to: School of Chemical Engineering (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director-EES
Accounting Office
Procurement Office
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Library, Technical Reports Section
Office of Computing Services
Director, Physical Plant
EES Information Office
Project File (OCA)
Project Code (GTRI)
Other _____

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT TERMINATION

Post-
9/20/77
OHL

Date: 9/20/77

Project Title: Graduate - Postdoctoral Training in Dental Materials.

Project No: E-19-566 562

Project Director: R. F. Hochman

Sponsor: DHEW/Public Health Service, National Institute of Dental Research

Effective Termination Date: 6/30/77

Clearance of Accounting Charges: 6/30/77

Grant/Contract Closeout Actions Remaining: NONE

- ☐ Final Invoice and Closing Documents
- ☐ Final Fiscal Report
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other _____

Assigned to: Chemical Engineering (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
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Project File (OCA)
Project Code (GTRI)
Other _____

SECTION IV SUMMARY PROGRESS REPORT		NU. R DE 07053-02	
PROGRAM DIRECTOR (Last, First, Initial) Hochman, Robert F		PERIOD COVERED BY THIS REPORT	
NAME OF ORGANIZATION Georgia Institute of Technology		FROM 7/1/76	THROUGH 1/25/77
TITLE OF PROGRAM (Repeat title shown in Item I on first page) Graduate-Postdoctoral Training in Dental Materials			

1. Describe accomplishments since last report. Describe the significance of any changes in the direction taken by the program during this period.
2. Publications pending or published and not previously reported? ☒ No ☐ Yes If "Yes," list below.
3. Foreign travel undertaken during the above period? ☒ No ☐ Yes If "Yes," describe below.

I. PROGRAM ACCOMPLISHMENTS (7/1/76 to 1/25/77)

A. Trainees

The past seven months have been primarily devoted to program start-up and developing trainee background and initiating trainee research. At present, three trainees are on the program, all have a strong interest and background in dental-medical materials. These trainees are:

Predoctoral

Mr. Danny F. Averette--Physicist--pursuing a Ph.D. degree in materials, specializing in dental materials research.

Postdoctorals

Dr. M. Forest Butler, D.D.S. plus a certificate in perio. He has background in summer dental training in materials as well as graduate course studies and a postdoctoral studies in the area of dental implants.

Dr. Kirk J. Bundy, Ph.D. Materials--Background has been primarily in the area of mechanics and materials characterization of dental-medical materials. He has performed work on initial ion implantation studies of dental materials.

B. Related Program Accomplishments (7/1/76 to 1/25/77)

1. A special visit was made by the training grant director to the Dental School of the Medical College of Georgia, meeting with Dean Hickey, Dr. Fairchild and Dr. Okabe with regard to a program to interrelate with their clinical materials research and to arrange a program for the orientation of non-DDS trainees in the area of dental and clinical research.
2. Arranged an initial visit, tentatively in April, for Dr. Kirk Bundy to spend approximately three to four weeks at the dental school of the Medical College of Georgia working on a special problem in conjunction with one of their clinical research scientists and observing basic operative and restorative dentistry procedures.
3. Visit to the Dental School, College of the Pacific and meeting with the Vice-President of Research, Dr. Gunner Ryge. A broad program was discussed, including future interaction in the area of relating their clinic research with our basic studies in dental amalgam corrosion. Should their program materialize further, it is planned that at least one and possibly others of their staff will visit Tech and spend a portion of their ~~same~~ time studying basic methods of corrosion analysis

to cooperate with us in providing a cohesive program to relate clinical observations of corrosion with laboratory studies.

4. A cooperate program, with Dr. M. Forest Butler as the major participant, has been initiated between Emory University Dental School and Georgia Tech. This cooperative program is planned to relate clinical studies with laboratory research, initially in the area of corrosion and then other mechanical and fabrication properties.

C. Facilities Improvement

Although not a direct result of this program, an exceptional improvement in facilities has been made in the materials area here at Georgia Tech. A new excellent scanning electron transmission microscopy (STEM) facility has been added which provides the latest in equipment for basic microstructural characterization of materials. In addition the Metallurgy Program, in cooperation with the School of Ceramics has purchased a separate scanning electron microscope (SEM) for graduate and postdoctoral use in various research projects. This provides a 24-hour a day facility here in the Department in addition to the other facilities in this area on campus.

In cooperation with the National Science Foundation and matched by Georgia Tech as well as other additional funds by Georgia Tech a large improvement has been made in the corrosion facilities on campus. The matching fund program for \$30,000 and an additional \$25,000 of project and institutional funds have been applied to the corrosion research lab over the past three years. An independent building, attached to the basic ChE-Met-Ceramics facilities has been renovated to serve as a corrosion research center with a major emphasis in the area of dental-medical materials.

In addition to these facilities a MTS system has been added to our mechanical test facilities program. This unit and another on the way are completely programmable for studies of mechanical properties and fatigue. A large rolling mill facility has been donated to the Institute by Lockheed Corporation and is being put into a separate facility for fabrication of special alloys, both at high temperature and by cold working. This facility would now cost far in excess of \$100,000 if purchased new.

II. PROGRAM OF TRAINEES

At present, the three trainees on the program have the following research programs underway.

- A. Mr. Danny F. Averette, pre-doctoral. Mr. Averette's research involves the study of the mechanical property behavior of dental amalgams in different types of corrosion as a function of time. The mechanical test results after given periods of exposure will consist of compressive stress tests, diametrical tensile tests and creep tests. Corrosion tests will include general crevice and galvanic corrosion.

At present approximately 14 amalgam alloys will be analyzed by placing samples in a controlled reaction cell, at 37°C, one percent sodium chloride for various periods of time up to one year. Mr. Averette has constructed the cells for the exposure of approximately 2,000 samples. In addition we are presently in redesign and construction phase of a pneumatic creep test unit with a capacity for testing five creep samples simultaneously. Mr. Averette has completed a major portion of his course work and is presently concerned with his Ph.D. thesis research program as outlined above.

- B. Dr. M. Forest Butler--Dr. Butler is presently taking courses in x-ray diffraction, electron microscopy and advanced metallography to further his background in basic materials. His major function as a half-time trainee will be developing his research in cooperation with the clinical materials research at the Emory University Dental School. Dr. Butler's two main research training thrusts will be (1) establish relationships between the present ongoing clinical materials studies at Emory on dental amalgams and his corrosion studies in the Tech laboratories and (2) Study the effect of bactericidal characteristics of dental amalgam with regard to deterring the growth of caries producing organisms. The later study was initiated by a summer dental trainee and will now be put in quantitative fashion by Dr. Butler and the program director in hopes of delivery at the 1978 IADR or AADR meetings.
- C. Dr. Bundy is basically working in research on ion implanted surfaces to improve the quality of dental restorative materials and dental implants. In the latter he will attempt to improve attachment. The ion implantation techniques allows the surface implantation of a whole range of materials can stimulate attachment chemically as well as mechanically.

III. CONTINUATION PROGRAM

The research objectives and training as outlined for the three trainees will be pursued as discussed in each trainee program. In addition another predoctoral and another half-time postdoctoral will be added to the program as soon as worthy candidates can be found from trainee applications. The training program will follow the objective and direction as outlined in Appendix I. In addition a brief account of staff and facilities available are attached in Appendix I.

IV. PROGRAM DIRECTOR'S ASSURANCE:

"The undersigned agrees to accept responsibility for the scientific and technical conduct of the research training program and for provisions of required progress reports if a grant is awarded as the result of this application."

1/28/77
Date

Program Director /

E-19-562

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
National Institutes of Health

GRANT NO.

1T32 DE07053-01

READ INSTRUCTIONS BEFORE COMPLETING

DATE OF THIS BUDGET PERIOD

NAME AND ADDRESS OF GRANTEE INSTITUTION

TRANSACTION NO.

Georgia Institute of Technology
Atlanta, Georgia 30332

(08)T2DE07053A

PHS ACCOUNT NO.

DF-144-76

INSTITUTIONAL ID NO.

E-19-562

FROM 7-1-76 TO 6-30-77

PROJECT PERIOD

FROM 7-1-76 TO 6-30-81

☐ CHECK IF FINAL REPORT

1. EXPENDITURES OF DHEW FUNDS FOR THIS BUDGET PERIOD

i. TRAINEE EXPENSES:

a. Personnel \$ 9,444.37

b. Consultant services 450.00

c. Equipment 882.83

d. Supplies 1,486.41

e. Travel (Staff), domestic 357.64

f. Travel (Staff), foreign

g. Patient care cost

h. Alterations and renovations

i. Other

1. Stipends \$ 9,150.00

2. Dependency Allowance

3. Travel 382.75

4. Tuition and Fees

k. Total direct costs 22,154.00

l. INDIRECT COSTS: (See Instructions)

Rate 8 % ☐ S&W ☒ TADC

Base \$ 22,154.00

1,772.32

m. TOTAL 23,926.32

2. EXPENDITURES FROM PRIOR PERIODS (previously reported)

-0-

3. CUMULATIVE EXPENDITURES (Item 1m plus Item 2)

23,926.32

4. TOTAL AMOUNT AWARDED - CUMULATIVELY

58,192.00

5. UNEXPENDED BALANCE (Item 4 less Item 3)

34,265.68

6. UNLIQUIDATED OBLIGATIONS (See Instructions 6 and 9)

-0-

7. UNOBLIGATED BALANCE (Item 5 less Item 6)

34,265.68

8. GRANT RELATED INCOME

a. INTEREST EARNED (enclose check)

-0-

b. OTHER (indicate disposition and enclose check if refundable)

-0-

9. REMARKS

I hereby certify that this report is true and correct to the best of my knowledge, and that all expenditures reported herein have been made in accordance with grant policies and for the purpose set forth in the application and award documents.

Evan Crosby, Associate Director of Financial Affairs

TYPED NAME, TITLE AND PHONE NUMBER OF INSTITUTION OFFICER

404-894-4622

SIGNATURE

7-26-77

DATE

ANNUAL REPORT OF TRAINING GRANT EXPENDITURES